**FACT SHEET: Cosco Busan Oil Spill Long-Term Impacts of Residual Tarballs**
**November 18, 2007**

**Cosco Busan Incident**

**Unified Command**

Date: November 18, 2007

# Fact Sheet

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## Cosco Busan Oil Spill Long-Term Impacts of Residual Tarballs

This is an assessment of the long-term disposition of the M/V Cosco Busan oil. These notes are based on the following information: On November 7, 2007 at 0830 PST, the container ship, M/V Cosco Busan, struck the Oakland Bay Bridge (37° 48.03'N, 122° 22.30'W) in San Francisco Bay, releasing approx. 58,000 gallons of bunker fuel, the most commonly used fuel for ocean-going vessels.

As of November 12th, 2007, much of the floating oil had been recovered or beached and daily trajectories of the oil movement were no longer required by the Incident Command. The remaining residual product consisted of weathered oil (scattered tarballs and silver sheens). However, with a spill of this size and oil type, small amounts of tarballs may continue to appear for an extended time.

## Forecast

**Sinking oil**
Analysis done by the California Dept. of Fish and Game, California Office of Spill Prevention and Response indicates that the fresh oil from the M/V Cosco Busan floated. At this time there is no indication that the weathered oil will have a density greater than the water inside or outside of the Bay. Tarballs mixed with sand have been reported, and these tarballs may sink.

In areas of high turbulence due to vessel traffic, wave action, and convergences in the currents, tarballs may be pushed down into the water column and remain there for minutes to a few hours. These tarballs will refloat and should not be confused with sinking oil.

**Inside Bay**
Inside the bay, scattered tarballs may appear throughout the area for as long as three weeks from the spill. Floating tarballs are likely to be most dense in the same regions they have been seen in previous days, mainly in convergence zones in areas of high currents (Raccoon Straight, Golden Gate, near Alcatraz). Small quantities are likely to be seen washed up on shore up to the north end of San Pablo Bay, and all the way down to the south end of the South Bay.

**Outer Coast**
Half Moon Bay is the most southern area where tarballs would be expected to occur with a slight chance of them extending to Año Nuevo. To the north, the most likely extent of tarballs would be within the vicinity of Stinson Beach with a slight chance of extending to Pt. Reyes.

We expect most, if not all, tarball impacts from the Cosco Busan spill to occur within two weeks of when the spill occurred.

**Farallon Islands**
The Farallon Islands are about 26 miles off the coast. The tidal currents from the bay entrance could push oil as far out as 15 miles on a strong ebb tide. Nontidal coastal currents will move oil along the coast. It is unlikely the oil will reach the Farallones; however, if strong or persistent Easterly winds occur in the next week, a few scattered tarballs may end up in vicinity of the islands. The possibility of this happening diminishes with time as the tarballs continue to degrade.

# Environmental Considerations

**Wind**
Statistical analysis for this time of year indicates winds typically come from the north about 67% of the time with southerly winds occurring approximately 24% of the time. Offshore or Easterly winds occur about 32% of the time, and onshore or Westerly winds about 57% of the time.

The winds affect the movement of oil in two ways: directly by moving the oil in the direction the wind is blowing (windage), and by driving the local coastal current. Onshore winds tend to move oil toward shore; offshore winds tend to move it away from the shore.

As the tarballs weather, the affects of wind on the floating tarballs will diminish. Consequently, weathered oil (tarballs), will be more difficult to beach than fresh oil due to winds.

**Tidal Currents**
Strong tidal currents dominate the movement of oil in the bay. The tides spread oil out over the mid-bay region within the first couple days after the Cosco Busan spill; however, there has not been a strong net outflow from the bay. As a result, the residual tarballs will tend to move back and forth, slowly spreading farther, but typically not far beyond where they already have been seen within the bay. This daily flow could result in scattered tarballs leaving the area on each ebb cycle.

**Coastal Currents**
The nearshore nontidal currents tend to move parallel to the shoreline, and are typically driven by regional winds. During the first week of the spill, winds were from the south, and drove the currents slowly to the north. The wind forecast for the next week is primarily for northwesterly winds, so we expect the currents to move south, carrying tarballs that are not beached with it.

**Refloating of weathered oil off shorelines**
Tarballs from the spill will continue to diminish in size, volume and quantities and their impact on organisms and beaches will diminish over the coming weeks. As the tarballs degrade, they may permanently disperse vertically into the water column or disperse horizontally over a larger area, reducing the concentration of oil. Tide heights will peak on November 24, increasing the potential for oil that had come on to the beach to redistribute off the shoreline and into new areas that had not been impacted previously.

Given the quantity and nature of the oil that was spilled inside the bay by the Cosco Busan, we can expect tarballs to persist inside the bay for approximately 2 – 3 weeks from the start of the spill. Outside the bay where there is less oil, we can expect tarballs to persist for about 1 ½ – 2 weeks after the spill.

**Previous Bay Area oil spills with long-term tarball impacts**
Historically, there has not been an oil spill that originated inside San Francisco Bay that resulted in oiled beaches north of Pt. Reyes or south of Pillar Point. There has not been an oil spill that originated within 15 miles of the entrance to the Golden Gate that has impacted beaches north of Pt. Reyes or south of Pigeon Point. Following is a listing of spills in this area, none of which resulted in significant amounts of subsurface oil being reported.

2007 – Cosco Busan (freighter)
Allided with Bay Bridge and released 58,000 gallons of oil
Oil reached as far north as Pt. Reyes and as far south as Pacifica
Approx. 2,083 birds were oiled, of which 1,381 were either recovered dead or later died at the care facility.
The Unified Command has recovered 16,419 gallons to date

1998 – Command Oil Spill (tanker vessel)
Approx. 10 miles offshore, released approx. 3,000 gallons into SF Bay
Approx. 1,500 seabirds affected with damages assessed at $4.05 million for seabird restoration
Oil impacted south entrance of the Golden Gate and reached as far north as Pigeon Pt.

1996 – Cape Mohican (tanker vessel)
While in drydock in San Francisco, approx. 96,000 gallons of oil were released spilling 40,000 gallons into the SF Bay, Monterey Bay and Gulf of the Farallones national marine sanctuaries
Tarballs reported at Stinson Beach to the north and Pillar Pt. to the south

1986 – Apex-Houston (tanker barge)
Lose hatch cover released approx. 25,800 gallons of oil along the central California coast Spill killed an estimated 9,817 seabirds within the Gulf of the Farallones National Marine Sanctuary

1984 – Puerto Rican (tanker vessel)
Exploded 20 miles offshore releasing approx. 1.4 million gallons of oil
Reached Farallon Islands and vicinity of Bodega Bay
Spill killed an estimated 2,874 seabirds, and did an unquantified amount of damage to water quality, fishery resources, marine mammals, and human uses
In 1985, the USCG recovered a little more than 61,000 gallons during cleanup operations

1953 – SS Jacob Luckenbach (freighter)
Sank 17 miles west of San Francisco with 475,000 gallons on board
Source of numerous “mystery spills” including 1997-98 Point Reyes Tarball Incident in which 2,000 oiled seabirds were recovered.
In 2002, the Unified Command recovered approx. 100,000 gallons in lightering operations

Note: Responder who conducted overfights for both the T/V Command oil spill in 1998 and the M/V Cosco Busan spill has indicated there was noticeably less oil outside of the bay from the M/V Cosco Busan spill than there was for the T/V Command spill, which resulted in tarballs no further than Pigeon Point to the south.

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